

CLAIMS

1. A test device for testing of analyte concentration in a fluid to be applied thereto, the device comprising:
- 5 a) a plurality of sensors arranged in a stack, each of said sensors carrying reagent means for producing an electrical signal in response to the concentration of analyte in an applied fluid, each of said sensors having a plurality of electrode tracks for transmitting said
- 10 electrical signal;
- b) a housing having an opening therein and containing the said stack of sensors;
- c) electrical contacts mounted in relation to the housing for engaging with electrode tracks on a sensor at
- 15 an engagement location;
- c) a meter connected to the said electrical contacts, having electronics means for producing a signal output which is dependent on the electrical signal from a sensor when the sensor is engaged with the said contacts;
- 20 d) a transport member rotatably mounted in the opening of the housing, having an axis of rotation which spans the opening and having an outer surface which is provided with a recessed region adapted to receive a single sensor from the stack;
- 25 e) spring means within the housing which urge the stack of sensors towards the transport member and which urge a single sensor into the said recess when the recess is suitably aligned adjacent to the stack;
- f) sealing means for making a moisture tight seal
- 30 between the transport member and the stack when the transport member is in a specified rotational position; and
- g) wherein rotation of the transport member with a sensor in the recessed region will transport the sensor to the engagement location or to a position where the sensor can be moved to the engagement location, whereby electrode tracks of the sensor can engage with the said electrical

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contacts.

2. A test device as claimed in claim 1, wherein the
sensors are stacked in a magazine within the housing, the
5 magazine having a single opening which faces the transport
member.
3. A test device as claimed in claim 2, wherein a first
end of the sealing means forms a seal around the magazine
10 and a second end of the sealing means locates in a groove
in the transport member to form a seal therewith when the
recessed region of the transport member is in register
with the stack of sensors.
- 15 4. A test device as claimed in claim 3, wherein the
sealing means comprises a retractable sleeve which
sealingly engages in the groove of the transport member
when in an extended configuration and which does not form
a seal with the transport member when in a retracted
20 configuration.
5. A test device as claimed in claim 1, wherein a pusher
is provided to impart translational motion to a sensor
mounted in the said recessed region during and/or after
25 rotation of the transport member so as to bring the sensor
to the engagement location.
6. A test device as claimed in claim 5, wherein the
pusher is mounted on the transport member and a portion of
30 the pusher is located in a helical track in the housing
whereby rotation of the transport member imparts
translational motion to the pusher.
7. A test device as claimed in claim 1, wherein the said
35 opening is the only opening to the inside of the housing,
and wherein the sealing means comprises a seal which is
secured in relation to an outer surface of the transport

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member and which seals the opening of the housing when the transport member is in a specified rotational position.

8. A test device as claimed in claim 2, wherein the
5 sealing means comprises a seal which is secured in
relation to an outer surface of the transport member and
which seals the opening of the magazine when the transport
member is in a specified rotational position.

10 9. A test device as claimed in claim 1, wherein the said
opening is the only opening to the inside of the housing,
and wherein the sealing means comprises a seal provided on
a door which is adapted to fit the said opening so that
the moisture tight seal is effected by closure of the
15 door; wherein the door is operatively connected to the
transport member so that the door will be open when the
transport member is in a first rotational position and
closed when the transport member is in a second rotational
position.

20 10. A test device as claimed in claim 2, wherein the
sealing means comprises a seal provided on a door which is
adapted to fit the opening of the magazine so that the
moisture tight seal is effected by closure of the door;
25 wherein the door is operatively connected to the transport
member so that the door will be open when the transport
member is in a first rotational position and closed when
the transport member is in a second rotational position.

30 11. A test device as claimed in claim 9, wherein the door
is provided with one or more teeth which restrain movement
of the stack of sensors against the force of the spring
means.

35 12. A test device as claimed in claim 11, wherein the
transport member is provided with at least one blade which
takes over the function of restraining the stack of

sensors when the door is opened.

13. A test device as claimed in claim 9, wherein the door
is pivotally mounted in relation to the housing.

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14. A test device as claimed in claim 1, wherein the
transport member is operationally connected to a return
spring which urges the transport member to adopt a
specified rotational position at which the sealing means
10 can provide a moisture proof seal between the stack of
sensors and the transport member.

15. A test device as claimed in claim 1, wherein a
portion of the sensor to which a fluid sample is to be
applied is not supported by the transport member when in
the engagement location.

16. A test device as claimed in claim 1, wherein the
transport member has an external profile which is
20 substantially circular in cross section.

17. A test device for testing of analyte concentration in
a fluid to be applied thereto, comprising: a housing
containing a stack of test strips and having an opening
25 therein; a transport member rotatably mounted in the
opening of the housing, having an axis of rotation which
spans the opening; the transport member having a recessed
region adapted to receive a single test strip; and spring
means which urge the stack towards the transport member;
30 wherein rotation of the transport member with a test strip
in the recessed region thereof will bring the said test
strip to an engagement location at which it can be engaged
with electrical contacts of a meter and at which the test
strip will be accessible to permit a user to apply a drop
35 of fluid thereto.

18. A test device as claimed in claim 17, further

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including sealing means which make a moisture-proof seal between the transport member and the stack when the transport member is in a specified rotational position.

5 19. A test device as claimed in claim 1, wherein each
sensor in the or each stack comprises a base member having
a working area to which the fluid is to be applied,
containing the reagent means, and a non-working area
adjacent to the working area, wherein the total thickness
10 of the sensor in at least a portion of the non-working
area is at least as great as the total thickness of the
sensor in the working area.

15 20. A test device as claimed in claim 19, wherein the
total thickness of the sensor in at least a part of the
non-working area is greater than the total thickness of
the sensor in the working area.

20 21. A test device for testing of analyte concentration in
a fluid to be applied thereto, the device comprising:
a) a plurality of sensors arranged in a stack, each of
said sensors carrying reagent means for producing an
electrical signal in response to the concentration of
analyte in an applied fluid, each of said sensors having a
plurality of electrode tracks for transmitting said
25 electrical signal;
b) a housing having an opening therein and containing
the said stack of sensors;
c) electrical contacts mounted in relation to the
30 housing for engaging with electrode tracks on a sensor at
an engagement location;
c) a meter connected to the said electrical contacts,
having electronics means for producing a signal output
which is dependent on the electrical signal from a sensor
35 when the sensor is engaged with the said contacts;
d) a transport member rotatably mounted in the opening
of the housing, having an outer surface which is provided

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with a recessed region adapted to receive a single sensor from the stack;

e) spring means within the housing which urge the stack of sensors towards the transport member in a direction

5 substantially perpendicular to a plane containing the axis of rotation of the transport member, and which urge a single sensor into the said recess when the recess is suitably aligned adjacent to the stack;

f) sealing means for making a moisture tight seal

10 between the transport member and the stack when the transport member is in a specified rotational position; and

g) wherein rotation of the transport member with a sensor in the recessed region will transport the sensor to the engagement location or to a position where the sensor can be moved to the engagement location, whereby electrode tracks of the sensor can engage with the said electrical contacts.

20 22. A test device as claimed in claim 1, further including load means for applying a compressive load to a sensor during at least a part of the time when the said sensor is located in the recessed region of the transport member.

25 23. A test device as claimed in claim 1, further including non-return means which prevent or inhibit transport of a sensor from the engagement location to the magazine and which prevent or inhibit reintroduction of an ejected used sensor to the engagement location.

24. A test device as claimed in claim 23, wherein the said non-return means and the said load means comprise a single resilient and flexible component.

35 25. A test device as claimed in claim 1, further including ratchet means associated with the stack of

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sensors which prevent or inhibit movement of the stack in a direction opposite to that in which the spring means urges the stack.

- 5 26. A test device for testing of analyte concentration in a fluid to be applied thereto, comprising: a housing containing a stack of test strips and having an opening therein; a transport member rotatably mounted in the opening of the housing; the transport member having a
10 recessed region adapted to receive a single test strip; and spring means which urge the stack towards the transport member; wherein rotation of the transport member with a test strip in the recessed region thereof will bring the said test strip to an engagement location at
15 which it can be engaged with electrical contacts of a meter and at which the test strip will be accessible to permit a user to apply a drop of fluid thereto or to a position from which the sensor can be moved to the engagement location; wherein load means are provided
20 between the transport member and a housing thereof, for applying a compressive load to a sensor during at least a part of the time when the said sensor is located in the recessed region of the transport member.
- 25 27. A test device as claimed in claim 1, suitable for use in testing glucose concentration in blood.